

CLAIMS

What is claimed is:

1. 1. An optical light guide apparatus comprising:
 2. a connector;
 3. a bundle of optical fibers positioned within said connector; and
 4. an epoxy joining said optical fibers together,

5. wherein said bundle of optical fibers has a polished distal end at one end of said connector, and

7. wherein the ratio of fiber size to binder particulate size of said epoxy is sufficient

8. to maintain the integrity of said bundle of optical fibers during polishing of said distal

9. end.
1. 2. The apparatus in claim 1, wherein the ratio of fiber size to binder particulate size
2. of said epoxy is above 25.
1. 3. The apparatus in claim 1, wherein the ratio of fiber size to binder particulate size
2. of said epoxy is between approximately 25 and 50.
1. 4. The apparatus in claim 1, wherein said connector is adapted to extend through an
2. opening in a surface of a device, such that said distal end of said bundle of optical fibers
3. one of is recessed in, is substantially flush with, and extends from a surface of said device
4. through which said connector extends.
1. 5. The apparatus in claim 1, further comprising a protective sheath surrounding a
2. portion of said bundle of fibers that extend outward from said connector.

1 6. The apparatus in claim 5, further comprising a second connector, wherein said
2 connector is positioned at a first end of said protective sheath and said second connector
3 is positioned at a second end of said protective sheath that is opposite said first end of
4 said protective sheath.

1 7. The apparatus in claim 1, wherein said optical fibers comprise one of a glass and
2 quartz.

1 8. An optical light guide apparatus comprising:
2 a protective sheath;
3 a connector connected to an end of said protective sheath;
4 a bundle of optical fibers positioned within said protective sheath and within said
5 connector; and
6 an epoxy joining said optical fibers together,
7 wherein the coefficient of thermal expansion of said epoxy matches that of said
8 connector.

1 9. The apparatus in claim 8, wherein said connector is adapted to extend through an
2 opening in a surface of a device, such that said distal end of said bundle of optical fibers
3 one of is recessed in, is substantially flush with, and extends from a surface of said device
4 through which said connector extends.

1 10. The apparatus in claim 9, further comprising a seal on said connector.

1 11. The apparatus in claim 10, wherein said seal seals said opening.

1 12. The apparatus in claim 9, wherein said connector further comprises a threaded
2 jam nut adapted to engage threads in said opening.

1 13. The apparatus in claim 8, further comprising a second connector, wherein said
2 connector is positioned at a first end of said protective sheath and said second connector
3 is positioned at a second end of said protective sheath that is opposite said first end of
4 said protective sheath.

1 14. The apparatus in claim 8, wherein said optical fibers comprise one of a glass and
2 quartz.

1 15. A method of forming an optical light guide apparatus, said method comprising:
2 bonding a bundle of optical fibers together using an epoxy;
3 polishing a distal end of said bundle of optical fibers to create an optical aperture,
4 wherein the ratio of fiber size to binder particulate size of said epoxy used in said
5 bonding process is sufficient to maintain the integrity of said bundle of optical fibers
6 during said polishing of said distal end; and
7 positioning said bundle of optical fibers into a protective sheath and a connector,
8 wherein said connector is positioned at one end of said protective sheath, and
9 wherein said distal end of said bundle of optical fibers is positioned at an end of
10 said connector.

1 16. The method in claim 15, wherein the ratio of fiber size to binder particulate size
2 of said epoxy used in said bonding process is above 25.

1 17. The apparatus in claim 15, wherein the ratio of fiber size to binder particulate size
2 of said epoxy used in said bonding process is between approximately 25 and 50.

1 18. The method in claim 15, further comprising extending said connector through an
2 opening in a surface of a device, such that said distal end of said bundle of optical fibers

3 one of is recessed in, is substantially flush with, and extends from a surface of said device
4 through which said connector extends.

1 19. The method in claim 18, further comprising positioning, on said connector, a
2 threaded jam nut adapted to engage threads in said opening.

20. The method in claim 18, further comprising positioning a seal on said connector,
wherein said seal seals said opening.